

## SECTION 5

*Not directly in response to Office action, but to better render the original intent, the following shall henceforth be considered for paragraphs [0017], [0018] and [0257] set forth in the original application filed 08/04/2003:*

[0017] Typical investment products are, without limiting completeness, stocks, bonds, treasury bills, guaranteed income products, income trust units, derivatives, currencies, commodities, mutual funds, exchange traded funds and combinations or groupings of at least one of these products thereof forming portfolios.

[0018] Essential financial data are sequential investment pricing data or investment returns attributed to a reference, base or unit time period. Fluctuations in pricing and derived returns, or volatility, can generally be described by variance and standard deviation  $\sigma$ . Returns fluctuate about a mean return  $R_m$ . Data in the form of prices, returns and volatility may pertain to historical or projected future performance, and may be established independently or obtained from a third party.

[0257] An important observation is that the topographical maps for the insurance against a loss  $I_s$  and the insurance against a profit  $I_p$  also correspond, in principle, to the complete set of solutions for the option valuation formula of F. Black and M. Scholes for the put and call options (see "The Pricing of Options and Corporate Liabilities", Journal of Political Economy, Vol. 81, No. 3, May/June 1973, pp. 637-654). The correspondence is exact if (1) the probability density is taken as the Log-Normal probability density, (2) the options are not exercised until their expiry date at time  $t$  (the so called European options), (3) the insurance is taken in the Black and Scholes theory as the ratio of the current value of the option to the current value of the portfolio for which an option is to be derived, (4) the cost for multiple period options are adjusted to an average insurance rate over unit time periods, and (5) in accordance with the risk neutral setting of the Black and Scholes theory, a second risk neutral portfolio is effectively introduced for pricing the option having a mean return  $x_m$  set equal to that of

the riskless rate of return, a volatility  $\sigma$  set equal to that of the portfolio for which an option is to be derived, and a benchmark value corresponding to the exercise price of the option at time  $t$  set equal to the mean return value of the portfolio for which an option is to be derived, assuming a continuously compounded rate of return as in the Black and Scholes theory (see, for example, "Option Pricing Theory", E.J. Elton and M.J. Gruber, Chapter 22 in Modern Portfolio Theory and Investment Analysis, Fifth Edition, John Wiley & Sons, 715 pp, 1995). The technique of topographically mapping insurance then corresponds to a powerful and general technique for extending complete sets of solutions for option valuation to other families of probability densities.